Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Withdrawn) A convex lens for allowing luminous flux from a light source to converge to a first optical information recording medium having a predetermined thickness and a second optical information recording medium thicker than the first optical information recording medium, characterized in that said convex lens comprises:

a central area close to a central axis of said luminous flux;

a peripheral area far from said central axis; and

an intermediate area located midway between said central area and said peripheral area, and

the luminous flux converging onto an information recording surface of said first optical information recording medium is the luminous flux that has passed through said central area and said peripheral area,

the luminous flux converging onto the information recording surface of said second optical information recording medium is the luminous flux that has passed through said intermediate area and said central area, and

the phase of the luminous flux that passes through said intermediate area is shifted with respect to the phase of the luminous flux that passes through said central area.

2. (Withdrawn) The lens according to claim 1, characterized in that the phase of the luminous flux that passes through the innermost perimeter of said intermediate area is shifted with respect to the phase of the luminous flux that passes through the outermost perimeter of said central area.

3. (Withdrawn) The lens according to claim 2, characterized in that a shift of said phase is set so as to delay by an amount Δ that satisfies the following (Equation 1):

Equation 1

$240° + m \times 360° < \Delta < 360° + n \times 360°$

m: Integer, n: integer more than or equal to m

4. (Withdrawn) The lens according to claim 3, characterized in that said amount Δ is an amount that satisfies the following (Equation 2):

Equation 2

$270° + m \times 360° < \Delta < 330° + n \times 360°$

m: Integer, n: integer more than or equal to m

5. (Withdrawn) A convex lens for allowing luminous flux from a light source to converge to a first optical information recording medium having a predetermined thickness and a second optical information recording medium thicker than the first optical information recording medium, characterized in that said lens comprises:

a central area close to a central axis of said luminous flux;

a peripheral area far from said central axis; and

an intermediate area located midway between said central area and said peripheral area, and

the luminous flux converging onto the information recording surface of said first optical information recording medium is the luminous flux that has passed through said central area and said peripheral area,

the luminous flux converging onto the information recording surface of said second optical information recording medium is the luminous flux that has passed through said intermediate area and said central area, and

said intermediate area has nature that spherical aberration is optimized to an optical information recording medium thicker than said second optical information recording medium.

6. (Withdrawn) A convex lens for allowing luminous flux from a light source to converge to a first optical information recording medium having a predetermined thickness and a second optical information recording medium thicker than the first optical information recording medium, characterized in that said convex lens comprises:

a central area close to a central axis of said luminous flux;

a peripheral area far from said central axis; and

an intermediate area located midway between said central area and said peripheral area, and

the luminous flux converging onto the information recording surface of said first optical information recording medium is the luminous flux that has passed through said central area and said peripheral area,

the luminous flux converging onto the information recording surface of said second optical information recording medium is the luminous flux that has passed through said intermediate area and said central area, and

the intermediate area that separates said central area from said peripheral area is formed on a surface of the lens, the surface facing said optical information recording medium.

7. (Withdrawn) A convex lens for allowing luminous flux from a light source to converge to a first optical information recording medium having a predetermined thickness and a second optical information recording medium thicker

than the first optical information recording medium, characterized in that said lens comprises:

a central area close to a central axis of said luminous flux;

a peripheral area far from said central axis; and

an intermediate area located midway between said central area and said peripheral area, and

the luminous flux converging onto the information recording surface of said first optical information recording medium is the luminous flux that has passed through said central area and said peripheral area,

the luminous flux converging onto the information recording surface of said second optical information recording medium is the luminous flux that has passed through said intermediate area and said central area, and

said central area is designed so that the phase of luminous flux that has passed through the area thereof is substantially shifted with respect to the phase of the luminous flux that has passed through said peripheral area.

8. (Withdrawn) The lens according to claim 7, characterized in that said phase shift substantially corresponds to one wavelength.

9. (Withdrawn) The lens according to any one of claim 1 to claim 8, characterized in that when the numerical aperture (hereinafter referred to as "NA") of all luminous fluxes that have passed through said lens is assumed to be (a), said NA of the boundary between said central area and said intermediate area is 0.6(a) to 0.8(a) and said NA of the boundary between said intermediate area and said peripheral area is 0.7(a) to 0.9(a).

10. (Withdrawn) The lens according to claim 5, characterized in that the thickness of said first optical information recording medium is substantially 0.6 mm and the thickness of said second optical information recording medium is substantially 1.2 mm, and

said intermediate area has nature that spherical aberration is optimized with respect to an optical information recording medium with a base material thickness within the following range:

1.2 mm < base material thickness ≤ 1.8 mm

11. (Withdrawn) An optical head, characterized by comprising the lens according to any one of claim 1 to claim 8 and a photoreception element that receives reflected light from said first optical information recording medium or said second optical information recording medium and converts said reflected light to an electric signal.

12. (Withdrawn) An optical information recording medium writing/reading apparatus, characterized by comprising said optical head according to claim 11 and a circuit that distinguishes said first optical information recording medium from said second optical information recording medium, selectively reads information from said electric signal, wherein the apparatus,

converges luminous flux from a light source onto said first optical information recording medium or said second optical information recording medium,

receives reflected light from said first optical information recording medium or said second optical information recording medium,

converts said reflected light to an electric signal and reads information from said electric signal,

converges the luminous flux that has passed through said central area and said peripheral area of said lens onto the information recording surface of said first optical information recording medium, and

converges the luminous flux that has passed through said intermediate area and said central area of said lens onto the information recording surface of said second optical information recording medium.

13. (Withdrawn) An optical information recording medium writing/reading method for, by using the optical head according to claim 11 and a circuit that

distinguishes said first optical information recording medium from said second optical information recording medium and selectively reads information from said electric signal, converging luminous flux from a light source onto said first optical information recording medium or said second optical information recording medium, receiving reflected light from said first optical information recording medium or said second optical information recording medium, converting said reflected light to an electric signal and reading information from said electric signal,

characterized in that the luminous flux that has passed through said central area and said peripheral area of said lens is allowed to converge onto the information recording surface of said first optical information recording medium, and

the luminous flux that has passed through said intermediate area and said central area of said lens is allowed to converge onto the information recording surface of said second optical information recording medium.

14. (Original) A convex lens for allowing luminous flux from a first light source to converge to a first optical information recording medium having a predetermined thickness and allowing luminous flux from a second light source having a wavelength different from the first light source to converge to a second optical information recording medium which is thicker than the first optical information recording medium, characterized in that said lens comprises:

a central area close to the central axis of said luminous flux;

a peripheral area far from said central axis; and

an intermediate area located midway between said central area and said peripheral area, and

the luminous flux converging onto the information recording surface of said first optical information recording medium from said first light source is the luminous flux that has passed through said central area, said intermediate area and said peripheral area,

the luminous flux converging onto the information recording surface of said second optical information recording medium from said second light source is the

luminous flux that has passed through said intermediate area and said central area, and

said intermediate area is provided with a diffraction grating.

15. (Currently Amended) The lens according to claim 14, characterized in that the diffraction grating of the intermediate area, using diffracted light of the same order, forms luminous flux from the first light source into ~~good~~ a reduced wavefront aberration with respect to the first optical information recording medium and forms luminous flux from the second light source into a reduced ~~good~~ wavefront aberration with respect to the second optical information recording medium.

16. (Original) The lens according to claim 15, characterized in that of the luminous flux converged onto the information recording surface of said second optical information recording medium from said second light source, the phase of the luminous flux that passes through said intermediate area is shifted with respect to the phase of the luminous flux that passes through said central area.

17. (Original) The lens according to claim 16, characterized in that the shift of said phase is set so as to delay by an amount Δ that satisfies the following (Equation 1):

Equation 1

$$240° + m \times 360° < \Delta < 360° + n \times 360°$$

m: Integer, n: integer more than or equal to m

18. (Original) The lens according to claim 17, characterized in that said amount Δ is an amount that satisfies the following (Equation 2):

Equation 2

$$270° + m \times 360° < \Delta < 330° + n \times 360°$$

m: Integer, n: integer more than or equal to m

19. (Original) The lens according to any one of claims 14 to 18, characterized in that wherein a diffraction grating is provided in the peripheral area far from said central axis.

20. (Previously Presented) An optical head, characterized by comprising:

a lens according to any one of claims 14 to 18; and

a photoreception element that receives reflected light from said first optical information recording medium or said second optical information recording medium and converts said reflected light to an electric signal.

21. (Original) An optical information recording medium writing/reading apparatus, characterized by comprising said optical head according to claim 20 and a circuit that distinguishes said first optical information recording medium from said second optical information recording medium and selectively reads information from said electric signal, wherein the apparatus,

converges luminous flux from a light source onto said first optical information recording medium or said second optical information recording medium,

receives reflected light from said first optical information recording medium or said second optical information recording medium,

converts said reflected light to an electric signal and reads information from said electric signal,

converges the luminous flux that has passed through said central area and said peripheral area of said lens onto the information recording surface of said first optical information recording medium, and

converges the luminous flux that has passed through said intermediate area and said central area of said lens onto the information recording surface of said second optical information recording medium.

22. (Original) An optical information recording medium writing/reading method for, by using an optical head according to claim 21 and a circuit that

distinguishes said first optical information recording medium from said second optical information recording medium and selectively reads information from said electric signal, converging luminous flux from a light source onto said first optical information recording medium or said second optical information recording medium, receiving reflected light from said first optical information recording medium or said second optical information recording medium, converting said reflected light to an electric signal and reading information from said electric signal, wherein

the luminous flux that has passed through said central area and said peripheral area of said lens is allowed to converge onto the information recording surface of said first optical information recording medium, and

the luminous flux that has passed through said intermediate area and said central area of said lens is allowed to converge onto the information recording surface of said second optical information recording medium.